

Abstract Submitted
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Whispering-Gallery-Mode

Resonances in Fluorescent Microspheres¹ MARY WILLIAMS, D. BRIAN THOMPSON, University of North Alabama — We are collecting emission spectra from fluorescent microspheres, aligned to form coupled cavities. A single fluorescent microsphere can act as a Fabry-Perot resonance cavity, so that it will exhibit morphology-dependent resonances (MDRs), also known as whispering gallery mode (WGM) resonances, as intense narrow peaks superimposed upon the free-space fluorescence emission background. Two or more microspheres in close proximity may form a coupled cavity, where the coupling arises from evanescent fields between the microspheres. The coupling strength then should be a strong function of separation distance between spheres. We use an optical tweezers to position the microspheres, to guide the excitation light, and to collect the emission from the microspheres for spectral analysis. The goal of these measurements is to examine the behavior of MDRs in the emission spectra of two coupled microspheres as separation distances are varied. However, at this stage in our work, we are examining how various dye-staining methods impact the spectra we collect.

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